HERB.

NEW OR INTERESTING TROPICAL AMERICAN DOTHIDEALES—I.

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Chardon

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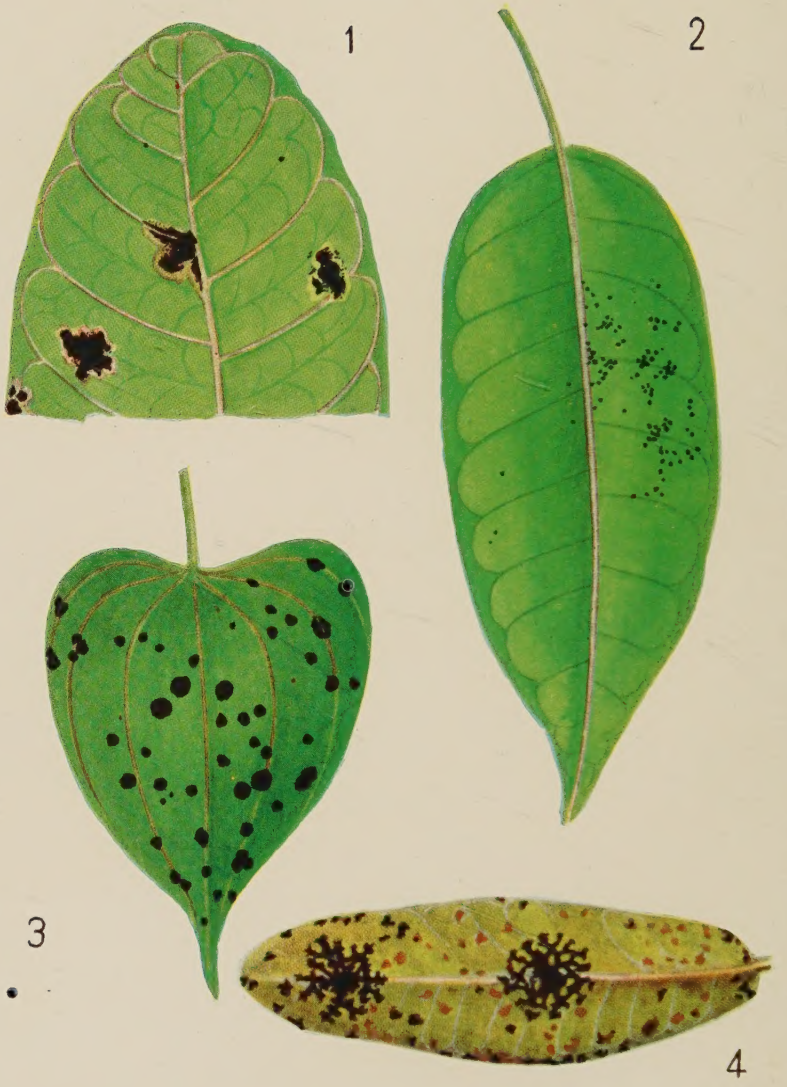

PHYLLACHORACEAE

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NEW OR INTERESTING TROPICAL AMERICAN DOTHIDEALES—I.

CARLOS E. CHARDON

(WITH PLATE 27 AND ONE TEXT FIGURE)

The tropical American species of Dothideales treated in Theissen and Sydow (1) are mostly confined to continental South America; the West Indian species were little known at the time of the publication of that monograph. Recent mycological work in Porto Rico as compiled by Seaver and Chardon (2) shows that 32 out of 73 species have been described as new by different workers. This shows that a large percentage are strictly Porto Rican or, at least, West Indian, when compared with the forms which are known to occur on the mainland. A large amount of territory, chiefly Cuba, Santo Domingo and most of the Lesser Antilles, remains to be covered. The known Cuban collections are meager, and have been accidentally picked up by botanists interested in higher plants; Santo Domingo was visited a year ago, by Dr. F. D. Kern and Mr. Rafael A. Toro, and a number of Dothideales, mostly belonging to the genus *Phyllachora*, have been lately reported by Toro (3). As to the rest of the West Indies, little or nothing is known about them. Thus there seems to be a vast field of investigation for systematic mycologists in all these islands. Mexico, Central America and northern South America are very little known also, as regards this special group of fungi.

The present paper describes a number of new or interesting

forms. It has been based on collections examined at the New York Botanical Garden, on the Kern and Toro collections of Santo Domingo and on the writer's collections from Porto Rico. The colored plate accompanying the paper has been drawn by Mario Brau, of the Museum of the Department of Agriculture of Porto Rico.

DOTHIDEACEAE

Dothichloe nigricans (Speg.) comb. nov.

Epichloe nigricans Speg. Anal. Soc. Ci. Argent. **19**: 47. 1885.
Not *Dothichloe nigricans* (Speg.) Seaver in Stevenson, Jour. Dept. Agr. Porto Rico **2**: 151. 1918.

Specimens collected in Porto Rico by Whetzel and Olive on *Ichnanthus pallens* Munro and erroneously reported by Stevenson as *Dothichloe nigricans* (Speg.) Seaver were described as *Dothichloe subnodosa* sp. nov. by the writer (Mycologia **13**: 287). It was found to differ widely from *Epichloe nigricans* Speg., type material of which was made available by the late Dr. Carlos Spegazzini.

Two other specimens from tropical America have been lately examined by the writer both of which compare favorably with the type of *Epichloe nigricans* Speg. Their stromata are 3–6 mm. long, and completely encircle the host, hence a new combination under *Dothichloe* is proposed here. In *Dothichloe subnodosa* Chardon, the stromata are small, 1–3 mm. in diameter and rarely encircle the host.

On *Panicum polygonatum* Schrad.

BRITISH GUIANA: A. S. Hitchcock No. *16691*, Georgetown, Nov. 6, 1899.

On *Panicum* sp.

CUBA: Collected by N. L. Britton and P. Wilson, no number, deposited in part in Chardon's herbarium No. *1535*, Prov. de Santa Clara, Sept. 4, 1903.

PHYLLACHORACEAE

Trabutia conspicua sp. nov.

Spots very irregular, fully occupied by the stromata; stromata black, shiny, slightly raised over the surface of the leaf, at first small, 2–5 mm. in diameter, angular, later coalescing into large,

conspicuous, tar-like spots, exceedingly irregular, sometimes star-shaped, 1–2 cm. in diameter, stromata between the cuticle and the epidermis (?); locules several in a stroma; 200–300 μ long, 150–180 μ wide; asci cylindrical-clavate, 8-spored, 110–120 $\times$ 15–20 μ; spores uniseriate above, biseriate in the main body of the ascus, elliptical, hyaline, continuous, 20–22 $\times$ 6–7 μ; paraphyses present (PLATE 27, FIG. 4).

This species is referred with some hesitancy to *Trabutia*, since the position of the stroma in the leaf was not clearly ascertained. It is a very conspicuous species on account of the large irregular or rather labyrinthiform, black stromata.

On *Capparis Grisebachii* Eichl.

CUBA: Exploration of Cuba (Britton, Earle and Wilson) No. *5959*, Rio San Juan, Prov. Santa Clara, Mar. 24–25, 1910 (*type*).

Catacauma portoricensis sp. nov.

Spots large, yellowish, equally visible from both sides of the leaf, 1–3 cm. in diameter, possessing many stromata; stromata black, not shining, angular, 2–4 mm. across, following the veins of the leaf and often confluent, more pronounced on the under surface, distinctly situated between the epidermis and the mesophyll; locules several, 2–4 in each stroma, angular through lateral pressure, 300–400 $\times$ 200–250 μ; asci cylindrical, 100–120 $\times$ 9–12 μ, 8-spored; spores navicular, uniseriate or partially biseriate, pointed toward one end, obtuse toward the other, continuous, hyaline, possessing a large drop of oil, 21–23 $\times$ 6–7 μ; paraphyses present.

On *Ficus Stahlii* Warb.

Cross sections of the stromata of this interesting species show plainly the position of the stroma in the tissues of the host. The row of epidermal cells is seen distinctly above the black stromata, indicating that the stroma is located between the epidermis and the mesophyll of the leaf. This stromatic character makes the fungus fall under the Scirrhiineae of the Phyllachoraceae, in the treatment of Theissen and Sydow. In the fresh material a whitish, gelatinous substance was oozing out of the individual stromata on the under surface of the leaves. A microscopical examination of this substance showed it to consist of an immensely large number of spores which are being liberated. This occurred right after a rain. This rather unique method of spore liberation in one of the Dothideales has never before been seen by the writer.

PORTO RICO: Chardon No. *1543*, Quebradillas, Mar. 17, 1922 (*type*); Chardon No. *1608*, Sabana Hoyos, Aug. 26, 1922.

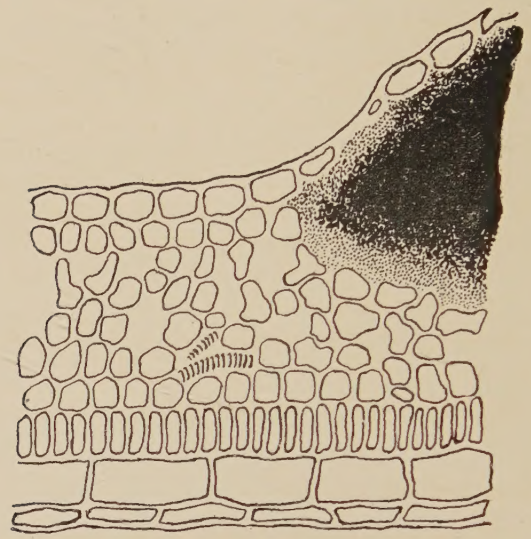

FIG. 1. *Catacauma portoricensis*. Cross section of stroma

Catacauma Brittoniana sp. nov.

Spots large, yellowish, 10 to 15 mm. in diameter, very conspicuous on the under surface of the leaf, scarcely so on the upper surface, possessing many confluent stromata; stromata black, not shiny, 2–5 mm. across or even more through the coalescence of various stromata, largely raised and very pronounced on the under surface, sometimes but not always following the veins of the leaf, distinctly situated between the epidermis and the mesophyll; locules several, 2–7 in each stroma, flattened, or angular through lateral pressure, 300–360 × 150–200 μ; asci cylindrical-clavate, 66–82 × 10–12 μ, 8-spored; spores navicular, uniseriate above, biseriate in the main body of the ascus, continuous, hyaline, 15–18 × 4–5 μ, possessing one or several oil drops; paraphyses present, profuse (PLATE 27, FIG. 1).

On *Ficus subscabrida* Warb.

A cross section of the stroma of this species, like the previous one, showed it to be distinctly between the epidermis and the mesophyll. In sections of very young stromata, the epidermal cells of the leaf of the host showed clearly above the stromatal tissue. The species thus appears to be a true *Catacauma*, unlike any other species described.

ISLE OF PINES: Explorations of Cuba No. *15472* (Britton, Britton & Wilson), San Juan, Mar. 15–17, 1916 (*type*).

Phyllachora Kerniana sp. nov.

Stromata amphigenous, black, shining circular, 1 mm. or less in diameter on the upper surface, not shining but more prominent (papillate) on the under surface, seldom coalescing, uniloculate; locules subglobose, fairly regular, distinctly immersed in the mesophyll, 185–250 μ long, 120–150 μ wide; asci cylindrical-clavate, 72–90 $\times$ 12–16 μ, 8-spored; spores uniseriate above, biseriate in the main body of the ascus, ellipsoidal, 14–17 $\times$ 6–7 μ, hyaline, continuous; paraphyses present (PLATE 27, FIG. 2).

On *Catalpa longissima* Jacq.

The small punctiform stromata protruding in the under surface of the leaf is very characteristic of this species.

SANTO DOMINGO: Kern & Toro No. *225*, La Vega, Mar. 17, 1926 (*type*).

Phyllachora inconspicua sp. nov.

Stromata amphigenous, black, shining, 1 mm. in diameter on the upper surface, rarely confluent, also small, inconspicuous and brown on the under surface, uniloculate; locules subglobose or irregular, distinctly immersed in the mesophyll, 180–300 μ long, 100–150 μ wide; asci elliptical-clavate, 70–95 $\times$ 12–18 μ, 8-spored; spores uniseriate above, biseriate in the main body of the ascus, ellipsoidal, 13–15 $\times$ 7–8 μ, hyaline, continuous; paraphyses present.

On *Stigmaphyllon lingulatum* (Poir.) Small.

The material examined is full of the rust *Puccinia inflata* Arth., whose purple shiny sori must not be confused with the stromata of this new *Phyllachora*. A very rare species only known from a single collection.

PORTO RICO: Cornell University Explorations of Porto Rico (C. E. Chardon) No. *901*, Peñuelas, July 30, 1920 (*type*).

Phyllachora domingensis sp. nov.

Stromata amphigenous, black, not shiny, very conspicuous, 1–2.5 mm. in diameter, more or less circular, equally visible from both surfaces of the leaf, plurilocular; locules globose, flattened, distinctly immersed in the mesophyll, 220–380 μ long, 160–220 μ wide; asci cylindrical or cylindrical-clavate, 85–110 $\times$ 11–15 μ, 8-spored; spores uniseriate, or partially biseriate, long elliptical,

somewhat pointed at the end, 18–22 × 5–6 μ, hyaline, continuous; paraphyses present.

On *Picramnia pentandra* Sw.

This species is distinctly new, and evidently different from other Phyllachoraceae on *Picramnia* in Theissen and Sydow which fall under different genera, as *Endodothella* and *Telimena*.

SANTO DOMINGO: Kern & Toro No. *187*, San Cristóbal, Mar. 14, 1926; Kern & Toro No. *268*, Santiago, Mar. 21, 1926 (*type*).

Phyllachora Eugeniae sp. nov.

Spots amphigenous, appearing as discolored circular areas, later fully occupied by the stromata; stromata black, shiny, 1 to 2.5 mm. in diameter, roughly circular on the under surface, not shiny, smaller and less conspicuous on the upper surface, pluriloculars, fully occupying the mesophyll; locules globose or subglobose, 110–150 μ long, 80–130 μ wide; asci cylindrical, 8-spored, 60–75 × 7–9 μ; spores obliquely uniseriate, or biseriate in the main body of the ascus, ellipsoidal, hyaline, continuous, 8–10 × 4–4.5 μ; paraphyses present.

On *Eugenia rhombea* (Berg.) Krug & Urban.

This species is distinct from others reported on *Eugenia*. *Phyllachora biareolata* Speg. is known from Brazil, Argentine and Paraguay, but the type species which has been examined shows a very characteristic and regular zone of dead tissue around the stromata bordered by a conspicuous black margin which is not present in our specimen. Seaver (4) reported the occurrence of *P. biareolata* Speg. on *Eugenia rhombea* in Saint Croix "although no authentic material had been seen." Certainly, our Porto Rican material is not that species. It also differs widely, in both stromatal and spore characters, from *Phyllachora Whetzelii* Chardon, also on *Eugenia* from Porto Rico and Santo Domingo.

PORTO RICO: University of Illinois, Porto Rican Fungi (F. L. Stevens) No. *321*, Guánica, Feb. 3, 1913 (*type*).

PHYLLACHORA ULEI Winter, Grevillea **15**: 90.

On *Rajania cordata* L. and *Dioscorea* spp.

This conspicuous and beautiful species seems to be common in Porto Rico, but appears to be heretofore unreported from the island. The stromata are shining black, 2–5 mm. in diameter and more or less rounded. The spores in Winter's species are

18–20 × 5–6 μ; in the material examined they appear to be smaller, 12–13 × 5–6 μ, but this difference is scarcely sufficient to warrant the erection of a new species. Perhaps it might be considered as a variety of *P. Ulei* which is only known to occur in the continent of South America (PLATE 27, FIG. 3).

PORTO RICO: Fink No. *459*, Rio Piedras, Nov. 30, 1915; Stevenson No. *3459*, Rio Piedras, Dec. 12, 1915; Stevenson & Rose No. *5797*, Rio Piedras, Nov. 17, 1916; Chardon No. *1539*, Las Cruces, Mar. 29, 1922.

PHYLLACHORA WHETZELII Chardon, Mycologia **13**: 293. 1921.

On *Eugenia monticola* Sw.

This appears to be the first report of this species outside of Porto Rico, where it was supposed to be endemic. The material seems to be identical with the *type*.

SANTO DOMINGO: Kern & Toro No. *188*, San Cristóbal, March 14, 1926.

RIO PIEDRAS, PORTO RICO

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2. **Seaver, F. J. & C. E. Chardon.** Mycology. Sci. Surv. Porto Rico **8**: 1–208. 1926.
3. **Toro, R. A.** Fungi of Santo Domingo—I. Mycologia **19**: 66–85, *pl. 6*. 1927.
4. **Seaver, F. J.** The Fungous Flora of St. Croix. Mycologia **17**: 5. 1925.

EXPLANATION OF PLATE 27

Fig. 1. Under surface of leaf of *Ficus subscabrida* showing stromata of *Catacauma Brittoniana* (4/5 nat. size).

Fig. 2. Under surface of leaf of *Catalpa longissima* showing minute stromata of *Phyllachora Kerniana* (4/5 nat. size).

Fig. 3. Under surface of leaf of *Dioscorea* sp. showing tar-spot stromata of *Phyllachora Ulei* Winter (4/5 nat. size).

Fig. 4. Upper surface of leaf of *Capparis Grisebachii* showing labyrinthiform stromata of *Trabutia conspicua* (4/5 nat. size).